AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method of coding information for transmission over a communication channel, said method comprising:

    generating a transmit sequence comprising a plurality of transmit symbols based on an input sequence comprising a plurality of input symbols; and

    differentially coding one or more bits of a first input symbol with respect to one or more bits from one or more previous input symbols, wherein at least one protected bit of said first input symbol is differentially encoded with respect to a less protected bit of a previous transmit symbol.

2-4. (Previously Cancelled)

5. (Previously Presented) The method of claim 1 wherein differentially coding one or more bits of said first input symbol with respect to one or more bits from one or more previous input symbols further comprises differentially coding at least one unprotected bit of said first input symbol.

6. (Original) The method of claim 5 wherein differentially coding at least one unprotected bit of said first input symbol comprises differentially coding said unprotected bit of said first input symbol with respect to a protected bit of a previous transmit symbol.

7. (Original) The method of claim 1 further comprising generating said input sequence based on an information sequence.

8. (Previously Presented) The method of claim 7 wherein generating said input sequence based on said information sequence comprises channel coding bits of said information sequence to produce a coded sequence.

9. (Original) The method of claim 8 wherein channel coding bits of said information sequence to produce said coded sequence comprises error coding said information sequence using an unequal error protection scheme.

10. (Original) The method of claim 8 wherein generating said input sequence based on said information sequence further comprises interleaving bits of said coded sequence to produce said input sequence.

11. (Original) The method of claim 10 wherein interleaving bits of said coded sequence to produce said input sequence comprises diagonally interleaving bits of said coded sequence to produce said input sequence.

12. (Original) The method of claim 1 further comprising modulating a carrier with said transmit sequence to produce a transmit signal.

13. (Previously Presented) A method of decoding a received sequence comprising:

demodulating a received signal using re-encoded bits fed back from a channel decoder as

pilot bits to generate a received sequence, the received sequence comprising a plurality

of received symbols;

differentially decoding the received sequence to generate an output sequence comprising a

plurality of output symbols, said received sequence having one or more differentially

coded bits; and

channel decoding said output sequence to generate a decoded sequence.

14. (Previously Cancelled).

15. (Currently Amended) The method of claim 13 14 wherein demodulating said received signal

to generate said received sequence and differentially decoding said received sequence to

generate said output sequence are performed jointly in an equalizer.

16-17. (Previously Cancelled).

18. (Previously Presented) The method of claim 13 further comprising outputting said re-

encoded bits from said channel decoder.

19. (Previously Presented) The method of claim 13 further comprising re-encoding said

decoded sequence to produce said re-encoded bits.

20. (Original) The method of claim 13 wherein differentially decoding said received sequence comprising said plurality of received symbols to generate said output sequence comprising said plurality of output symbols comprises differentially decoding one or more bits of a first received symbol with respect to one or more bits from one or more previous received symbols.

21. (Original) The method of claim 20 wherein differentially decoding one or more bits of said first received symbol with respect to one or more bits from said one or more previous received symbols comprises differentially decoding at least one protected bit of said first received symbol.

22. (Original) The method of claim 21 wherein differentially decoding said at least one protected bit of said first received symbol comprises differentially decoding said at least one protected bit of said first received symbol with respect to a less protected bit of a previous received symbol.

23. (Original) The method of claim 20 wherein differentially decoding one or more bits of said first received symbol with respect to one or more bits from said one or more previous received symbols comprises differentially decoding at least one unprotected bit of said first received symbol.

24. (Original) The method of claim 23 wherein differentially decoding said at least one unprotected bit of said first received symbol comprises differentially decoding said unprotected bit of said first received symbol with respect to a protected bit of a previous received symbol.

25. (Previously Presented) An apparatus for coding an input sequence to generate a transmit sequence, said apparatus comprising:

a differential coder to generate a transmit sequence comprising a plurality of transmit symbols based on an input sequence comprising a plurality of input symbols by differentially coding one or more bits of a first input symbol with respect to one or more bits from one or more previous transmit symbols to produce one or more differentially coded bits in said transmit sequence; and

wherein the differentially coded bits comprise at least one protected bit that is differentially coded with respect to a less protected bit of a previous transmit symbol.

26-28. (Previously Cancelled).

29. (Previously Presented) The apparatus of claim 25 wherein said differentially coded bits further comprises at least one unprotected bit.

30. (Currently Amended) The apparatus method of claim 29 wherein said at least one unprotected bit is differentially coded with respect to a protected bit of a previous transmit symbol.

31. (Original) The apparatus of claim 25 further including a channel coder to channel code an information sequence to generate said input sequence.

32. (Original) The apparatus of claim 31 wherein said channel coder codes said information sequence using an unequal error protection scheme.

33. (Original) The apparatus of claim 31 further comprising an interleaver to interleave coded bits output by said channel coder to generate said input sequence.

34. (Original) The apparatus of claim 33 wherein said interleaver is a diagonal interleaver.

35. (Original) The apparatus of claim 25 further comprising a modulator following said differential coder to modulate said transmit sequence onto a carrier.

36. (Currently Amended) An apparatus for decoding a received sequence comprising:

an equalizer to differentially decode a received sequence comprising a plurality of received

symbols to generate an output sequence comprising a plurality of output symbols, said

received sequence having one or more differentially coded bits; ~~and~~

wherein said equalizer ~~a differential decoder to~~ differentially decodes one or more bits of a

first received symbol with respect to one or more bits from previous received symbols,

and wherein at least one differentially coded bit comprises a protected bit that is

differentially decoded with respect to a less protected bit of a previous received symbol.

37. (Currently Amended) The apparatus of claim 36 wherein said equalizer comprises ~~further~~

~~comprising~~ a demodulator to demodulate a received signal to generate said received sequence.

38. (Currently Amended) The apparatus of claim 37 wherein said equalizer comprises said

demodulator and a ~~said~~ differential decoder, and performs the demodulation and differential

decoding jointly.

39. (Original) The apparatus of claim 38 further comprising a channel decoder to decode said

output sequence output from said differential decoder to generate a decoded sequence.

40. (Original) The apparatus of claim 39 wherein said demodulator comprises a multi-pass

demodulator that receives re-encoded bits fed back from said channel decoder, wherein said re-

encoded bits are used as pilot bits by said demodulator to demodulate said received signal.

41-42. (Previously Cancelled).

43. (Previously Presented) The apparatus of claim 36 wherein at least one differentially coded bit comprises an unprotected bit, and wherein said unprotected bit is differentially decoded with respect to a protected bit.